

**Notice of Allowability**

Application No.

10/552,906

Applicant(s)

KAWAI, MASAKAZU

Examiner

Rita Leykin

Art Unit

2837

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to \_\_\_\_.
2. ☒ The allowed claim(s) is/are 1-11.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 10/13/05
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_.

RITA LEYKIN  
PRIMARY EXAMINER

### **REASONS FOR ALLOWANCE**

1. The following is an examiner's statement of reasons for allowance. The prior art made of record in the attached form PTO-892 considered to be pertinent to the submitted application.

Takenaka et al. US # 6,969,965 disclose a control device for a legged mobile robot, in which a correction manipulated variable of a desired floor reaction force is subsequently determined based on an error between an actual state quantity, such as a body posture angle, of the robot 1 and a desired state quantity of the same, and at the same time, a desired movement of the robot is subsequently determined by the use of correction manipulated variable and a dynamic model. A friction force component, which defines a frictional force between the robot and a floor such as a translation floor reaction forces horizontal component, is set as a variable to be limited, and an allowable range of the variable to be limited is determined. A resultant force of an inertial force and gravity, generated by the movement of the robot on the dynamic model, balances with a floor reaction force obtained by correcting the desired floor reaction force by the correction manipulated variable.

However, none of the prior art teaches or suggests in combination:

- Claimed first step, based on position of the center of gravity of the robot, the position of an ankle joint, of each leg, and the position of metatarsophalangeal joint of the foot of the leg and calculating the vertical distance from the ankle joint to a ground contact surface of each leg in contact with the ground while mobile body is in motion, and

- Estimating the horizontal position of the floor reaction force acting point of each leg in contact with the ground during the motion on the basis of a relative positional relationship among the position of the center of gravity, the position of the ankle joint, and the position of the metatarsophalangeal joint of the leg that have been grasped in the first step, and
- Estimating the vertical position of the floor reaction force acting point of the leg as the position vertically apart from the ankle joint by the vertical distance from the ankle joint to the ground contact surface of the leg that has been grasped in the first step.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

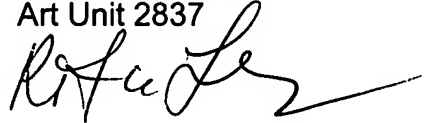
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rita Leykin whose telephone number is (571)272-2066. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula Bradley can be reached on (571)272-2800 ext. 33. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

R.L.

Rita Leykin  
Primary Examiner  
Art Unit 2837

A handwritten signature in black ink, appearing to read 'Rita Leykin', with a long horizontal flourish extending to the right.